SAUNAK SINHA RAY

Scientific Researcher

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Address
Hollarovo Namesti 11
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Technical Skills

- Data Management, Analysis, & Visualization of big data/ global datasets.

- Statistical Modelling

- Predictive Analysis

- Vulnerability and risk assessment

- Development of empirical scales from survey data

- Development of survey questionnaire & research

- Stakeholder mapping, analysis, engagement

Programming Skills

- Python
- R
- MS-Excel (Power Query & Power Pivot)
- SPSS
- GIS
- Environmental Modelling Tools (HEC RAS, MODFLOW)
- STATA
- SQL

Profile

I am an experienced researcher with a strong foundation in environmental risk analysis and data-driven decision-making. With four years of corporate experience across environmental consulting, sustainability, and policy frameworks, I can integrate technical, social, and policy dimensions to address complex challenges. A proactive and adaptable professional, I thrive on solving challenging problems and driving impactful projects.

Experience

Early-Stage Researcher (MSCA-PhD Fellow)   **Dec 2021 - Present**

Czech Technical University in Prague (CVUT, Prague)

Project: *Understanding & Analyzing Microplastic Transport Pathways in Agricultural Soil Systems*

- Developed a novel method to use fluorescent microplastics as proxy tracers in arable soils to study its redistribution processes – Image processing, thresholding & segmentation (big-data acquisition).
- Field experiments & lab analysis related to simulated erosion scenarios and pollution pathways to assess environmental risks.
- Data cleanup, statistical analysis, visualization using Python, R, MS-Excel (Power Query).
- Independent mindset to develop & complete four research experiments - Presented findings internationally, driving global discussions on microplastics and soil sustainability.
- Development of an interactive web-based game (using JS, HTML, and CSS) to promote a citizen-science perspective related to microplastic pollution

Research Assistant

Technische Universität Dresden (Dresden, Germany)

Mar 2020 – Feb 2021

Project: *Development of sustainability indicators for water security in rural Costa Rica*

- Developed sustainability indicators related to water governance for rural water security in Costa Rica (Climate, Water, Drought and SDG related Risk Mapping) – Used R, SPSS, GIS for data analysis and visualization
- Conducted participatory analysis of water governance frameworks and policy recommendations.
- Capacity building & knowledge dissemination by conducting two workshops and one training program.

Consultant

Mar 2019 – Feb 2020

International Water Management Institute (IWMI, Pretoria, South Africa)

Project: *Household Water Insecurity in a Coupled Human and Natural System - Empirical evidence from rural and peri-urban communities of Limpopo, South Africa*

- Developed a novel empirical scale for household-level water insecurity – correlated the developed scale with the household food insecurity access scale (water vs food insecurity).
- Empirical analysis of socio-economic, socio-ecological, and institutional stressors (gendered dimension of household insecurity, out-migration factors affecting rural-urban divide).
- Choice card modelling to infer 'Willingness to pay' for water services.
- Statistical analysis of farmers' perception of climate change factors – developed a web app to collect citizen science enabled data for project ESGUSA.

Project: *Operationalizing community-driven multiple-use of water services (MUS) in South Africa*

- Characterization and analysis of self-supply water service delivery models (communal and private self-supply) – survey design, data collection, analysis & visualization using STATA, MS-Excel, R.
- Develop a 'water-ladder' framework to capture intra-community inequality in water access.
- Participatory analysis, stakeholder analysis, mapping, and interaction (top down and bottom up).

Intern

Mar 2020 – Feb 2021

United Nations University (UNU-FLORES, Dresden, Germany)

Project: *Success factors for citizen science projects in water quality monitoring*

- Literature review, data collection, analysis, and visualization (using R and STATA).

UNESCO World Water Assessment Program (UNESCO-WWAP, Perugia, Italy)

Project: *UNESCO-WWAP Gender Disaggregated Water Data Toolkit 2019 & World Water Development Report: Leaving No One Behind, 2019 (acknowledged as an intern)*

- My primary focus was identifying sex-disaggregated indicators based on migration and climate change - data gathering, cleaning, and analysis.
- Prepare a preliminary questionnaire for the identified indicators, including report writing.

Consultant

Environmental Resource Management (ERM, India)

2014-2017

- Environmental site assessment & remediation strategies for contaminated sites (fieldwork, empirical data analysis, statistical analysis of big data, environmental modelling of groundwater, surface water, and soil).
- Project management – Managed three key clients, stakeholder engagement, Proposal & Report Writing.

Associate Consultant

WSP Golder (India)

2013-2014

- Water vulnerability assessment & risk mapping (India & Middle East)
- Environmental due diligence.

Education

PhD   Dec 2021 - Present

Czech Technical University in Prague (CVUT, Prague)

Marie Sklodowska-Curie Actions PhD Fellow

Project: Impact of Micro and Macro-plastics in Agricultural Soils (SOPLAS)

Master of Science (MSc)   2017 - 2019

Technische Universität Dresden (Germany)

Erasmus Mundus Joint Masters Scholarship Fellow – Groundwater and Global Change (GroundwatCH)

Bachelor of Technology (B.Tech)   2009 - 2013

University of Petroleum and Energy Studies (India)

Geosciences Engineering

Publication

- A. San Llorente Capdevila, A. Kokimova, S. Sinha Ray, T. Avellán, J. Kim,S. Kirschke; Success factors for citizen science projects in water quality monitoring; Sci. Total Environ., 728 (2020),10.1016/j.scitotenv.2020.137843
- S. Sinha Ray et al..; A cost-effective protocol for detecting fluorescent microplastics in arable soils to study redistribution processes (Under Review – Journal of Polymer Testing)
- S. Sinha Ray et al..; Influence of tillage-induced microplastic movement in agricultural soils (Under Review – Journal of Hazardous Materials)
- E. Severe and S. Sinha Ray et al.; Rainfall-induced lateral and vertical microplastics transport of varying sizes in agricultural fields (Under process of submission to Journal Science of Total Environment)

Languages I speak

- English, Hindi, Bengali (Native/ Full proficiency)
- German (A2 level)
- Czech (Beginner – learning)